AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims:

1. (currently amended) An apparatus for MRI, comprising:

an RF birdcage coil having a coil axis, an end ring portion disposed about the axis, and a plurality of legs disposed parallel to the axis and in signal communication with the end ring portion; and

an RF shield disposed about the coil and in signal communication therewith, the shield comprising a ~~cylindrical~~ cylindrically arranged conductive sheet having first and second ends, a plurality of sets of discontinuous slots disposed about the cylindrical sheet and running between the first and second ends, wherein a region of discontinuity within a set of the slots aligns with the end ring portion;

wherein the coil and shield are configured to have a desired Q-factor equal to or greater than a defined threshold Q-factor, the defined threshold Q-factor being defined as 50% of the Q-factor that the coil and shield would provide as a result of the shield being made from a sheet of solid copper having a thickness of about three times the skin depth at the Larmor frequency of protons[[.]]; and

wherein the RF shield and coil are capable of providing the desired Q-factor in response to the RF shield being configured by arranging a single sheet of the conductive sheet into the cylindrically arranged conductive sheet with a single seam running between the first and second ends.

2. (original) The apparatus of Claim 1, wherein the region of discontinuity has an axial length equal to or greater than the width of the end ring portion.

3. (original) The apparatus of Claim 2, wherein the region of discontinuity has an axial length equal to or greater than about two times the width of the end ring portion.

4. (original) The apparatus of Claim 1, wherein the number of sets of discontinuous slots is equal to or greater than the number of legs.

5. (original) The apparatus of Claim 1, wherein the sheet comprises a material having an electrical conductivity equal to or greater than about 2% and equal to or less than about 20% the electrical conductivity of pure copper.

6. (currently amended) The apparatus of Claim 1, wherein:

the sheet comprises a mesh[[.]]; and

in response to the seam having an overlap with a dielectric between the overlapped sections, the RF coil has a Z-gradient coil with a first resistance characteristic that is less than a second resistance characteristic that the Z-gradient coil would have as a result of the seam being electrically joined absent a dielectric overlap, the first resistance characteristic being less than the second resistance characteristic over a frequency range from 2kHz to 50kHz.

7. (original) The apparatus of Claim 6, wherein the mesh comprises a copper alloy.

8. (canceled)

9. (original) The apparatus of Claim 6, further comprising a gradient coil disposed about the RF coil, wherein the mesh is embedded in epoxy at the gradient coil.

10. (original) The apparatus of Claim 9, wherein the region of discontinuity has an axial length equal to or greater than about two times the width of the end ring portion.

11. (original) The apparatus of Claim 1, wherein the plurality of sets of slots are disposed between the plurality of legs.

12. (original) The apparatus of Claim 11, wherein the plurality of sets of slots are equally spaced.

13. (currently amended) The apparatus of Claim 1, wherein:

the RF shield further comprises an integrally formed capacitor, defined by a dielectric overlap at the single seam, running lengthwise between the first and second ends, the capacitor being disposed only partially around the circumference of the cylindrical sheet[[.]]; and

in response to the integrally formed capacitor, the RF coil has a Z-gradient coil with a first resistance characteristic that is less than a second resistance characteristic that the Z-gradient coil would have as a result of the seam being electrically joined absent a dielectric overlap, the first resistance characteristic being less than the second resistance characteristic over a frequency range from 2kHz to 50kHz.

14. (currently amended) An apparatus for MRI, comprising:

means for generating a gradient field;

means for generating an RF field; and

an RF shield disposed for shielding the gradient field generating means, the shield comprising a cylindrically arranged conductive sheet having first and second ends, and a plurality of sets of discontinuous slots disposed about the cylindrical sheet and running between the first and second ends;

~~means for RF shielding the gradient field generating means;~~

wherein the RF field generating means and the RF shield ~~shielding means~~ are configured to have a desired Q-factor equal to or greater than a defined threshold Q-factor, the defined threshold Q-factor being defined as 50% of the Q-factor that the RF field generating means and the RF shield ~~shielding means~~ would provide as a result of the RF shield ~~shielding means~~ being made from a sheet of solid copper having a thickness of about three times the skin depth at a frequency of about 64 MegaHertz[[.]]; and

wherein the RF shield and the gradient field generating means are capable of providing the desired Q-factor in response to the RF shield being configured by arranging a single sheet of the conductive sheet into the cylindrically arranged conductive sheet with a single seam running lengthwise between the first and second ends.

15. (original) The apparatus of Claim 14, wherein:

the means for RF shielding comprises means for conducting eddy currents induced by the means for generating an RF field.

16. (original) The apparatus of Claim 15, wherein:

the means for RF shielding comprises means for blocking eddy currents induced by the means for generating a gradient field.

17. (currently amended) An apparatus for MRI, comprising:

an RF birdcage coil having a coil axis, an end ring portion disposed about the axis, and a plurality of legs disposed parallel to the axis and in signal communication with the end ring portion; and

an RF shield disposed about the coil and in signal communication therewith, the shield comprising:

a single cylindrically arranged ~~cylindrical~~ copper alloy mesh sheet having a single overlap seam, first and second ends, a plurality of sets of discontinuous slots disposed about the cylindrical sheet and running between the first and second ends, wherein a region of discontinuity within a set of the slots aligns with the end ring portion; and

an integrally formed capacitor at the overlap seam running lengthwise between the first and second ends, the capacitor being disposed only partially around the circumference of the cylindrical sheet[[.]];

wherein in response to the integrally formed capacitor at the overlap seam, the RF coil has a Z-gradient coil with a first resistance characteristic that is less than a second resistance characteristic that the Z-gradient coil would have as a result of the seam being electrically joined absent a dielectric overlap, the first resistance characteristic being less than the second resistance characteristic over a frequency range from 2kHz to 50kHz; and

wherein the first resistance characteristic is 1/3 the second characteristic at 10kHz.

18. (new) The apparatus of Claim 6, wherein:

the first resistance characteristic is 1/3 the second resistance characteristic at 10kHz.